

Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation



Item 5

July 7, 2015 Board Meeting

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Lawrence Livermore National Laboratory Presentation



Model Criteria Overview

- Outlines groundwater monitoring methods to be used in assessing the potential effects of well stimulation treatments
- Prioritizes monitoring of groundwater that is or has the potential to be a source of drinking water, but will assess all beneficial uses
- Describes how groundwater will be sampled and tested



Model Criteria Components

1. Area-Specific Groundwater Monitoring (Operators)
2. Requirements for Designated Contractor Sampling and Testing (Property Owner Requested)
3. Regional Groundwater Monitoring (State Water Board)



Timeline

- April 29, 2015 – Draft Model Criteria released
- May 19, 2015 – Public Workshop
- May 29, 2015 – Close of written comment period
- June 23, 2015 – Revised Draft Model Criteria released
- June 30, 2015 – Close of written comment period
- July 7, 2015 – Consideration of adoption

Introduction (1.0)

- Model Criteria are not meant for:
 - site investigation and cleanup.
 - early detection of impacts to groundwater from well stimulation

- Model Criteria are designed to:
 - characterize baseline water quality conditions and detect potential impacts to beneficial use waters from well stimulation treatments.

Introduction (1.0)

- Water Boards staff may consider proposed alternatives and modifications to the Model Criteria.
- A modification must not impair the Water Board's ability to assess the potential effects of well stimulation treatments as required by Water Code section 10783.

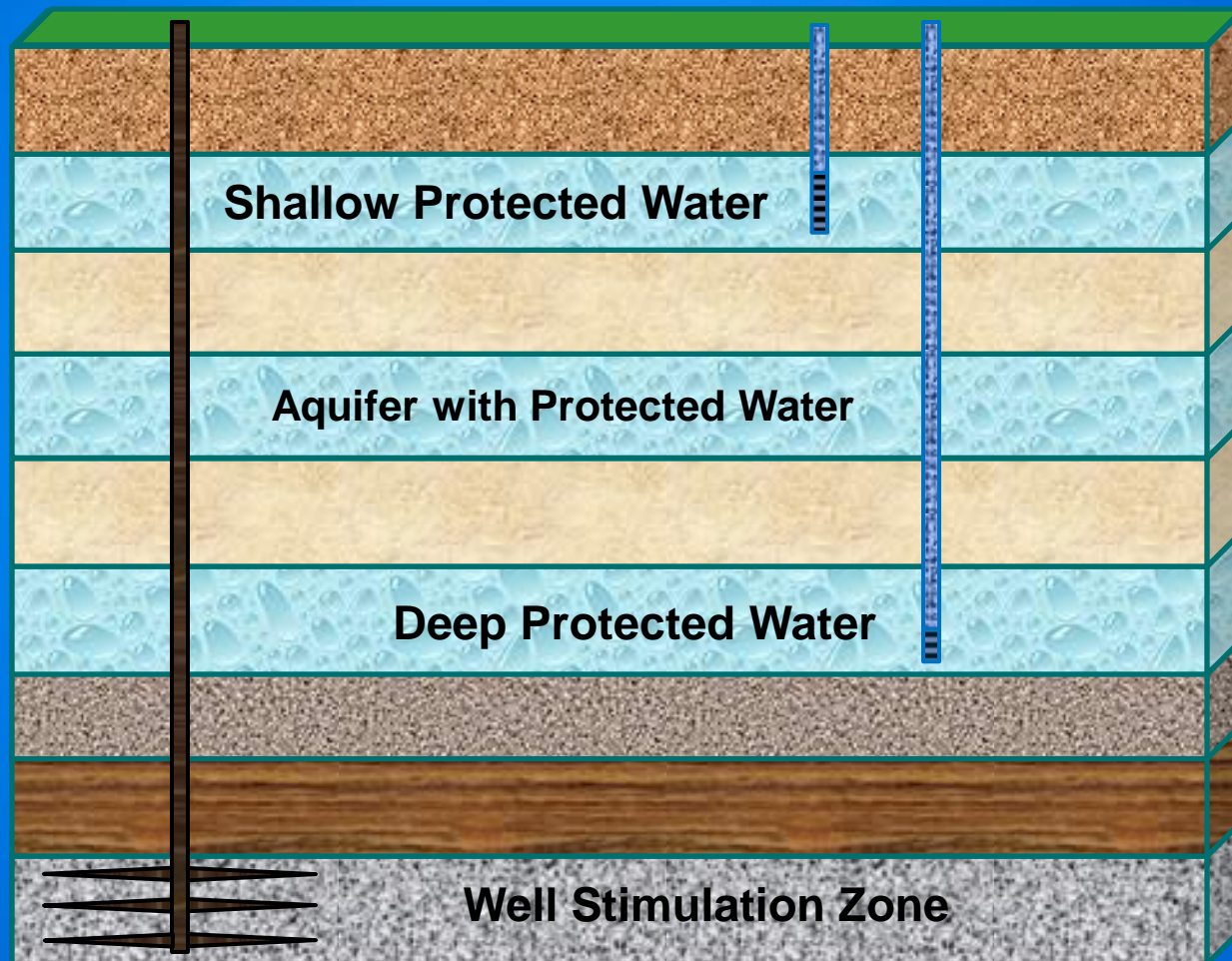
Groundwater Monitoring Where Protected Water is Present (2.1)

- Protected Water is defined as:
 - Water with less than 10,000 milligrams per liter (mg/L) of total dissolved solids (TDS), and
 - Outside an exempt aquifer (meeting the criteria of Code of Federal Regulations, title 40, part 146.4).
- The requirement of a yield of more than 200 gallons per day has been removed from the definition of protected water.

Groundwater Monitoring Design (2.1.1)

- The requirement to monitor each aquifer containing protected water that is penetrated by the well to undergo stimulation has been modified:
 - When multiple aquifers are penetrated, a minimum of two aquifers shall be monitored separately:
 - ❖ Shallow protected water
 - ❖ Deep protected water
 - Additional aquifers may require monitoring based on site-specific conditions.

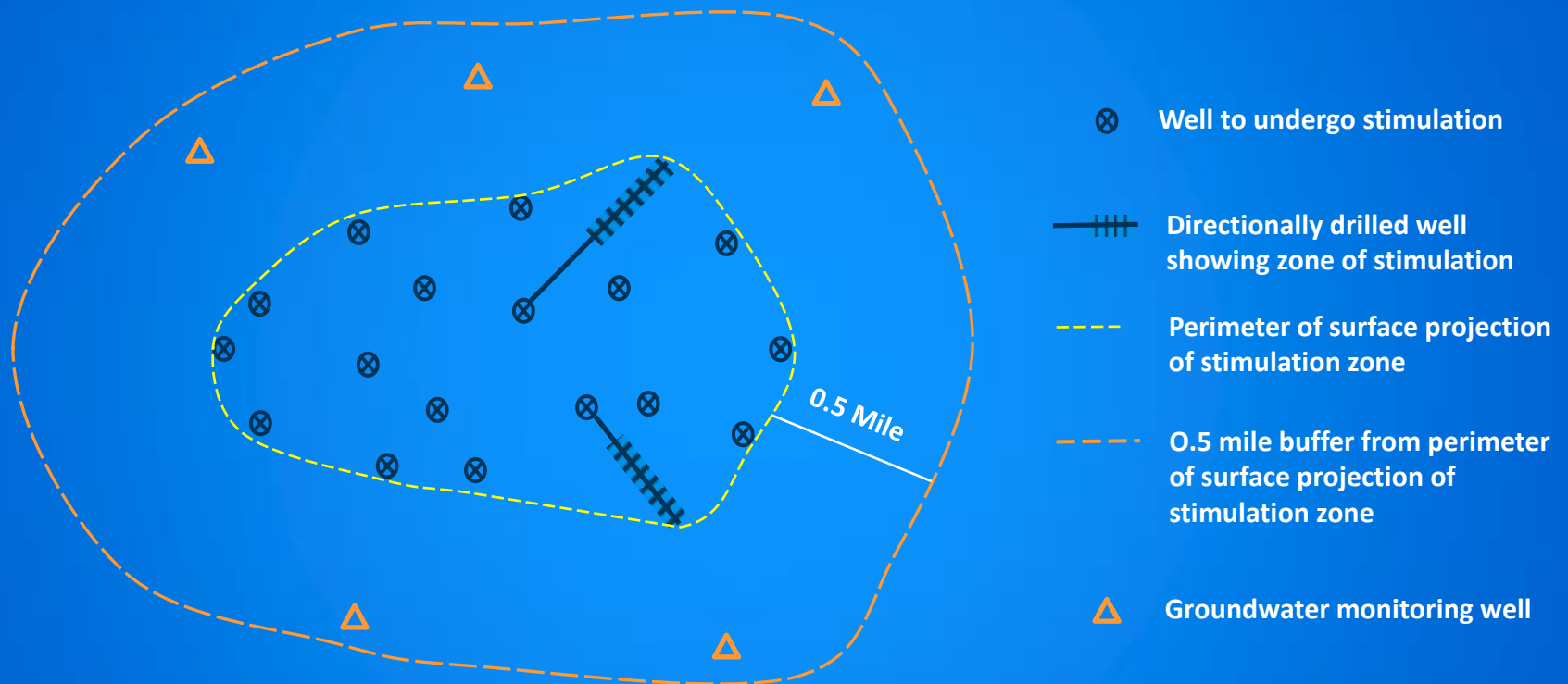
A minimum of two aquifers shall be monitored



Groundwater Monitoring Design (2.1.1)

- Groundwater monitoring wells shall be located within 0.5 mile of the surface projection of the zone(s) of stimulation for a well
- Added clarifying text: “or within 0.5 mile of the perimeter of the surface projection of the zone(s) of stimulation for a group of wells”.

Groundwater Monitoring Design (2.1.1)



Monitoring wells are to be installed within 0.5 mile of the perimeter of the surface projection of the zone(s) of stimulation for a group of wells

Groundwater Monitoring Plan Requirements (2.1.2)

- Operators are required to install monitoring wells in groundwater zones where a well failure or breach has occurred.
- A contingency plan must be submitted that outlines the conceptual framework for monitoring well locations, depths, and well construction details to detect potential impacts of a well failure or breach

Groundwater Monitoring Plan Requirements (2.1.2)

- The Axial Dimensional Stimulation Area (ADSA) must be approved by DOGGR.
- The Water Board's review of area-specific groundwater monitoring plans will occur in parallel with DOGGR's well stimulation permit review.
- Final Water Boards approval of a groundwater monitoring plan will not occur prior to DOGGR approving the ADSA.

Sampling and Testing Requirements (2.1.3)

- The list of required analytes have been moved to the appendix
- Based on analytical results, the Water Boards may modify the list of required analytes.

Reporting Requirements (2.1.4)

- Operator reporting is to include analysis of data collected to date and identification of potential impacts.
- If potential impacts are identified, proposed actions necessary to protect water quality must be included.
- Report is to be signed and stamped by a California registered professional geologist or engineer.

Regional Monitoring Program (4.0)

- Monitoring will leverage the use of wells from other groundwater monitoring programs, where available.
- Data, information and status reports will be made publicly available on a regular basis.
- Formal reports on the status and findings are anticipated to be prepared every two years starting January 2018.

Applicability of Model Criteria

- Model Criteria to be used to satisfy groundwater monitoring requirements for well stimulation permits.
- Does not apply to groundwater monitoring plans that were approved in connection with permits issued by DOGGR prior to the adoption of these Model Criteria



Applicability of Model Criteria

- Written concurrence for the exclusion of groundwater monitoring issued prior to the date of adoption of the Model Criteria will remain in effect unless future information indicates the presence of protected water.
- The development of threshold criteria on the transition from area-specific to Regional Monitoring Program is not included at this time.
 - Operators may use Regional Monitoring Program wells if approved by Water Boards staff

Board Resolution

- Water Board staff to collaborate with stakeholder groups to develop performance measures for evaluation of the Model Criteria by March 1, 2016.
- The State Water Board supports and encourages monitoring approaches that leverage the use of groundwater monitoring wells from other regulatory programs
- Enter into contracts, and any amendments thereto, to implement the provisions of the Model Criteria.

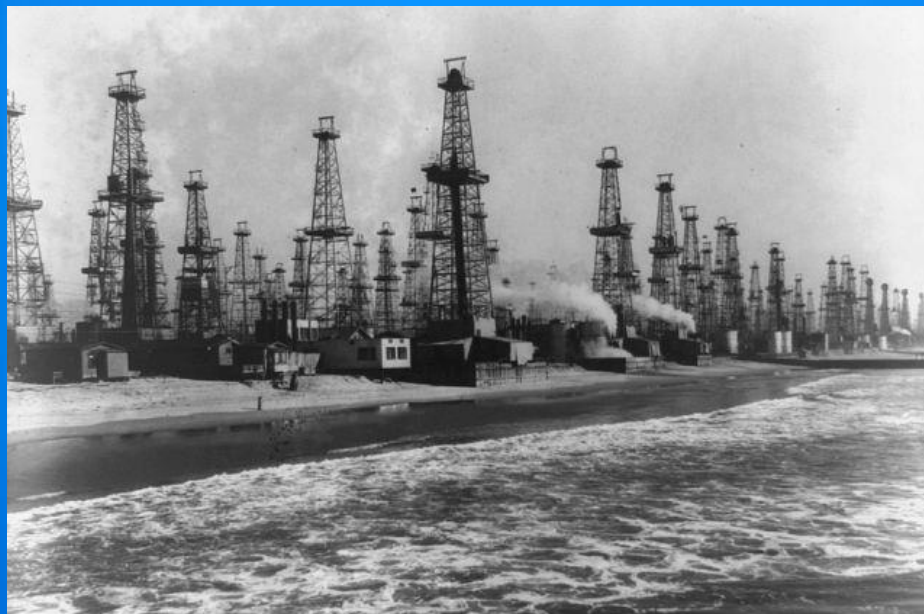
Additional Information

➤ **State Water Board Web Site**

http://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4.shtml

➤ **DOGGR Web Site**

<http://www.conservation.ca.gov/dog/Pages/WellStimulation.aspx#Item1>



End of Presentation

